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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/630,812	07/31/2003	Mayur Joshi	M4065.0927/P927	9797

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EXAMINER
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BATAILLE, PIERRE MICHE

ART UNIT	PAPER NUMBER
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2186

DATE MAILED: 05/05/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 10/630,812	<b>Applicant(s)</b> JOSHI, MAYUR	
	<b>Examiner</b> Pierre-Michel Bataille	<b>Art Unit</b> 2186	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 03 March 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-45 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 22-27 is/are allowed.
- 6) ☒ Claim(s) 1-21 and 28-45 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### *Response to Arguments*

1. Applicant's arguments filed March 3, 2006 with respect to claims 1-21, 28-34, and 36-45 have been fully considered but they are not persuasive in view of the following remarks.

Applicant argues that claims 1-21, 28-34, and 36-45 are not anticipated by Roth (US 6,771,525), specifically the feature of "priority encoder circuitry that responds to the CAM array providing priority signals indicating at most one group of two or more memory locations, the indicated group storing an entry that has a search width that is a multiple of the location width, the entry having priority and meeting the match criterion."

Please note that "priority encoder circuitry that responds to the CAM array providing priority signals indicating at most one group of two or more memory locations", correspondingly, Roth discloses selecting one or more of the match line output signals for selectively ***combining match line latch outputs as the results of a search and comparison*** in response to the width selected. FIG. 1 shows a group of four match lines and their corresponding match line latch outputs.

"The indicated group storing an entry that has a search width that is a multiple of the location width," as claimed, corresponds to performing search operations using variable width search data with priority encoder being provided with the selectively combined match line outputs in response to variable word width control signal. The system by Roth discloses performing variable word width searching in a content

Art Unit: 2186

addressable memory comprises selectively combining match line latch outputs from two adjacent CAM memory arrays and providing the selectively combined match line outputs to a multiple match resolver/priority encoder in response to a variable word width control signal.

The entry having priority and meeting the match criterion is disclosed by Roth as Roth discloses priority encoder to which are provided the selectively combined match line outputs in response to a variable word width control signal with multiple match resolver to which are provided the search results. A priority encoder circuit block provides as an output signal the highest priority match address where the match information is located. The priority encoder and multiple match resolver are configured to choose the hit having the highest priority address and provide that highest priority address as the output.

In view of the above remarks, it is believed that claims 1-21, 28-45 are met Roth, alone or in combination with US 6,901,000 (Ichiriu et al). Therefore, the Office Action rejection is maintained and repeated below.

### ***Claim Rejections - 35 USC § 102***

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States

Art Unit: 2186

only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 1-21, 28-34, and 36-45 are rejected under 35 U.S.C. 102(e) as being anticipated by US 6,771,525 (Roth).

With respect to claims 1, 5, 7, 9, 17, 28-31, 34, 36-39, and 41-45, Roth discloses a content addressable memory (CAM) comprising: a CAM array that stores entries in memory locations that each have a location width (***content Addressable memory (CAM) for performing search operations using variable width search data, said CAM comprising a plurality of arrays of CAM cells***); the CAM array providing, for each location, a match signal indicating whether the location has a stored entry satisfying a match criterion (***the plurality of arrays of CAM cells, each coupled to a respective sub-search data bus, and providing match line being indicative of the results of a search and comparison formed in the associated CAM array***); match combining circuitry that responds to the match signals and to a signal indicating a search width that is a multiple of the location width, the match combining circuitry providing combined match signals, each combined match signal indicating a combination of a group of match signals, the combination depending on the indicated search width (***selecting one or more of the match line output signals for selectively combining match line latch outputs as the results of a search and comparison in response to the width selected***); priority encoder circuitry that responds to the combined match signals, providing priority signals indicating at most one combined match signal that has priority and is asserted (***priority encoder to which are provided the selectively combined match line outputs in response to a variable word width***

**control signal**); and search results circuitry that responds to the priority signals, providing search results signals indicating results of the search at the indicated search width (**multiple match resolver to which are provided the search results**). [See Fig. 1; Col. 2, Lines 10-52; Col. 3, Lines 10-46.]

With respect to claims 11, 13, 20, 22, 32-33, 40, Roth additionally describe the CAM memory array to store data entries that satisfy a match criterion, comparison circuitry in the memory array to possibly search memory locations based on content and configuration register having fields within the register specifying the word width to search based on the content (corresponding to the claimed suppress values) [Col. 1, 45-47].

With respect to claims 2-3, 6, 8, 10-12, 14-16, 21, Roth discloses the CAM wherein the selection circuitry including match signal; the search results include an address code, an array match signal; the locations being variable with encompassing location width of 80, 160, and 320 bits, encompassing search with being once, twice, or four times the location width [Col. 3, Lines 48-61; Col. 4, Line 11 to Col. 5, Line 21].

### ***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the

Art Unit: 2186

invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 35 is rejected under 35 U.S.C. 103(a) as being unpatentable over 6,771,525 (Roth) in view of US 6,901,000 (Ichiriu et al).

With respect to claim 35, Roth discloses the invention as claimed (see analysis above) but fails to specifically disclose lower and upper address encoding circuitry. However, Ichiriu discloses, in the same field of endeavor, content addressable memory with address comparand with even and odd comparand register enable to compare respective comparand data to thereby generating multiple comparand results, logic circuit configured match results to selectively combine match results on plurality of match lines based on search width [Fig. 5, 16-17; Col. 26, Lines 31-47; Col. 4, Lines 12-31]. Therefore, it would have been obvious to one of ordinary skill in the art to include lower and upper address encoding circuitry as in the example of Ichiriu because the result would enable a single CAM device to have a increased sustained search where multiple compare circuits are enable to perform compare operation one after another in a pipeline fashion to increase the search rate, as taught by Ichiriu [Col. 4, Lines 14-26].

#### ***Allowable Subject Matter***

6. Claims 22-27 are allowed.

#### ***Conclusion***

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

8. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Pierre-Michel Bataille whose telephone number is (571) 272-4178. The examiner can normally be reached on Mon-Fri (8:00A to 4:30P).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matthew M. Kim can be reached on (571) 272-4182. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.



Art Unit: 2186

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Pierre-Michel Bataille  
Primary Examiner  
Art Unit 2186

May 1, 2006

**PIERRE BATAILLE**  
**PRIMARY EXAMINER**